

What is claimed is:

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1. An improved valve enclosure assembly for use with an air inflatable mattress having at least one air bladder inflated by compressed air, a pump fluidly coupled to the at least one air bladder for providing compressed air thereto, and a processor for providing commands to the improved valve enclosure assembly during an inflate/deflate cycle, the improved valve enclosure assembly being fluidly coupled intermediate the pump and the at least one air bladder for controlling the inflation of the at least one air bladder, comprising:

an enclosure defining a substantially fluidly sealed air chamber and having at least one air inlet to the air chamber being fluidly coupled to the pump; and

pressure monitor means being operably coupled to the processor and being in fluid communication with the at least one bladder for continuously monitoring the pressure in the at least one bladder.

2. The improved valve enclosure assembly of claim 1 wherein the pressure monitor means continuously monitors the pressure in the at least one bladder during an inflate/deflate cycle.

3. The improved valve enclosure assembly of claim 1 wherein the pressure monitor means monitors the pressure in the at least one bladder by monitoring the pressure in the air chamber.

4. The improved valve enclosure assembly of claim 1 further including at least one valve being fluidly sealingly disposed in a valve aperture defined in the enclosure by a snap-fit engagement therewith and being in fluid communication with both the exterior of the enclosure and with the air chamber.

5. The improved valve enclosure assembly of claim 1 wherein a plurality of guides and stops are disposed within the enclosure for correctly positioning components within the enclosure.

6. The improved valve enclosure assembly of claim 1 further including at least one solenoid operated valve disposed within the enclosure, said plurality of guides and stops for disposing the solenoid with respect to the valve.

7. The improved valve enclosure assembly of claim 1 further including at least one valve disposed within the enclosure, the at least one valve being snap fit in an aperture defined in a wall of the enclosure.

8. The improved valve enclosure assembly of claim 1 wherein the at least one valve has a circumferential ramped face, said ramped face for compressively engaging a circumferential beveled face of the aperture to effect the snap fit of the at least one valve.

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9. The improved valve enclosure assembly of claim 1 further including at least one valve disposed within the enclosure, the at least one valve having a valve member, the valve member being biased in sealed disposition by the compressed air in the bladder.

10. The improved valve enclosure assembly of claim 1 further including at least a second valve disposed within the enclosure, the at least a second valve for exhausting compressed air from the enclosure.

11. The improved valve enclosure assembly of claim 9 wherein the at least one valve is fluidly coupled to a first bladder of the inflatable mattress and further including at least a second valve disposed within the enclosure, the at least a second valve being fluidly coupled to a second bladder of the inflatable mattress.

12. The improved valve enclosure assembly of claim 11 further including at least a third valve disposed within the enclosure, the at least a third valve for exhausting compressed air from the enclosure.

13. The improved valve enclosure assembly of claim 1 wherein the enclosure is formed of an enclosure portion and a rear cover portion, a flexible seal

247 being compressively interposed between the enclosure portion and a rear cover portion to effect a substantially fluid tight seal therebetween.

7 14. The improved valve enclosure assembly of claim 13 wherein the enclosure further includes a plurality of lead grooves defined in the enclosure portion proximate the rear cover portion, said lead grooves for passing electrical leads into the enclosure.

8 15. The improved valve enclosure assembly of claim 14 wherein the flexible seal fluidly seals the lead wires disposed in the lead grooves.

16. A method of effecting a desired pressure in a bladder of an air inflatable mattress, comprising the steps of:

providing a commanded desired pressure of the bladder;

opening a valve fluid coupled to the bladder;

continuously monitoring the existing pressure in the bladder;

determining the differential between the existing pressure in the bladder and the desired pressure in the bladder;

exhausting air from the bladder through the valve when the differential indicates that the existing pressure in the bladder is greater than the desired pressure;

energizing a pump fluidly coupled to the valve for providing compressed air to the bladder when the differential indicates that the desired pressure in the bladder is greater than the existing pressure in the bladder to inflate the bladder; and

closing said valve when the existing pressure in the bladder substantially equals the desired pressure in the bladder.

17. The method of claim 16, the mattress having a plurality of air bladders, further including the steps of:

providing a commanded desired pressure of a selected one of the plurality of bladders;

opening a valve fluid coupled to the selected one of the plurality of bladders.

18. The method of claim 16 wherein the existing pressure in the bladder is continuously monitored at a tap on a valve enclosure assembly.

19. An improved valve enclosure assembly for use with an air inflatable mattress having at least one air bladder inflated by compressed air, a pump fluidly coupled to the at least one air bladder for providing compressed air thereto, and a processor for providing commands to the improved valve enclosure assembly during an inflate/deflate cycle, the improved valve enclosure assembly being fluidly

coupled intermediate the pump and the at least one air bladder for controlling the inflation of the at least one air bladder, comprising:

an enclosure defining a substantially fluidly sealed air chamber and having at least one air inlet to the air chamber being fluidly coupled to the pump;

at least one valve operably coupled to the enclosure being in selective fluid communication with the air chamber and being in fluid communication with the at least one air bladder for selectively fluidly coupling the air chamber to at least one air bladder; and

pressure monitor means being operably coupled to the processor and being in fluid communication with the at least one valve for monitoring the pressure in the at least one bladder.

20. The improved valve enclosure assembly of claim 19 wherein the at least one valve has a valve housing, pressure monitor means being formed integral with said valve housing.

21. The improved valve enclosure assembly of claim 19 further including at least one valve being fluidly sealingly disposed in a valve aperture defined in the enclosure by a snap-fit engagement therewith and being in fluid communication with both the exterior of the enclosure and with the air chamber.

22. The improved valve enclosure assembly of claim 19 wherein a plurality of guides and stops are disposed within the enclosure for correctly positioning components within the enclosure.

13. ~~23.~~ The improved valve enclosure assembly of claim ~~22~~¹ further including at least one solenoid operated valve disposed within the enclosure, said plurality of guides and stops for disposing the solenoid with respect to the valve.

24. The improved valve enclosure assembly of claim 19 further including at least one valve disposed within the enclosure, the at least one valve being snap fit in an aperture defined in a wall of the enclosure.

25. The improved valve enclosure assembly of claim 24 wherein the at least one valve has a circumferential ramped face, said ramped face for compressively engaging a circumferential beveled face of the aperture to effect the snap fit of the at least one valve.

26. The improved valve enclosure assembly of claim 19 further including at least one valve disposed within the enclosure, the at least one valve having a valve member, the valve member being biased in sealed disposition by the compressed air in the bladder.

27. The improved valve enclosure assembly of claim 19 further including at least a second valve disposed within the enclosure, the at least a second valve for exhausting compressed air from the enclosure.

28. The improved valve enclosure assembly of claim 26 wherein the at least one valve is fluidly coupled to a first bladder of the inflatable mattress and further including at least a second valve disposed within the enclosure, the at least a second valve being fluidly coupled to a second bladder of the inflatable mattress.

29. The improved valve enclosure assembly of claim 28 further including at least a third valve disposed within the enclosure, the at least a third valve for exhausting compressed air from the enclosure.

30. The improved valve enclosure assembly of claim 19 wherein the enclosure is formed of an enclosure portion and a rear cover portion, a flexible seal being compressively interposed between the enclosure portion and a rear cover portion to effect a substantially fluid tight seal therebetween.

31. The improved valve enclosure assembly of claim 30 wherein the enclosure further includes a plurality of lead grooves defined in the enclosure portion proximate the rear cover portion, said lead grooves for passing electrical leads into the enclosure.

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The improved valve enclosure assembly of claim 31 wherein the flexible seal fluidly seals the lead wires disposed in the lead grooves.

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